# INDEX.

The * Indicates that the Article is Illustrated with Engravings.


A

Accidents, working capacity of man after ....329
Acoustics, sound interference....*446
Aerial warfare. See Aeronautics military.
Aeronautics.
—Albany-New York flight....*473, *480
—Aviator's costumes....* 85
—Cross country flying in France.342, 360
—Curtiss's flight down the Hudson, *472, *480, *502
—Delagrange, Leon, death.... 85
—De Lesseps's flight across the channel ....*502
—Flight with five passengers....360
—Hamilton ....494
—Hamilton's New York to Philadelphia flight ....*513, *521
—Injunction, Wrights', dissolved..514
—Instruction at University of Paris.479
—Le Blon's fatal accident....342
—London-Manchester race....372, *397
—New era in America....474
—Paulhan, injunction against....182
—Paulhan's flight near New York...234
—Philadelphia-New York flight, *513, *521
—Rolls flight across channel....*502
—Rougier's Monaco flights....*333, *342
—Six thousand miles on an aeroplane.494
—Storm warnings for aeronauts....511
—Weather, forecasts for....519
—"Zeppelin," accident to....*416
Aeronautics exhibitions.
—Boston show....106, 124, 183, *196
—Los Angeles aviation meet.8, 22, *105
—Nice aviation meet....*372
Aeronautics, prizes.
—Gould $15,000 prize....482
—Los Angeles aviation meeting.... 22
—New York World prize....480
—Scientific American trophy, *7, *4841, 514
—Small aeroplanes ....239
Aeronautics, military.
—Aerial torpedo....482
—Motor balloon guns....* 48
Aeroplanes.
—Aeroplane vs. dirigible....370
—Gyroscope in....314, 419
—Machine for beginners....* 85
—Measuring height of....*439
—New, at home and abroad....*236
—Parsival monoplane, first test....342
—Pfitzner's monoplane....*140, 299
—Speed of propeller ....*21, 27
—Triplane of A. V. Roe....* 85
—Weight disposition....359
—Wright German company.... 8
—See also Aeronautics, prizes.
Afghanistan, first metal bridge....*241
Agassiz, Alexander, death....299
Agriculture.
—Effect of rain on cotton industry.319
Agricultural implements.*
—Harrow with automatic lifter....*504
—Motor vehicle for the farmer.*43, *50
Air resistance experiments....302, *437
Alaska Coal beds....198
Alloys.
—Compressed metal powders....174
—Elektron ....64, 201
Aluminium.
—Coinage in France....118
—Elektron—lighter than aluminium, 64, 201
—Woven aluminium ....39
Ambidexterity, why right-handed....260
Ambulance for dogs....*91
Ammonia purifier for refrigerating plants ....*423
Amusements.
—Candle and funnel....*168
—Distillation ....168
—Hero's fountain....*168
—Paradoxes of ebullition....168
—Wandering chemicals ....*523
Angstrom, Knut, Prof. death....419
Antlers interlocked ....*147
Antarctic continent, height of....*464
Antarctic explorations.
—Charcot ....182
—German expedition ....239
—Shackleton ....294
Arbitration versus self-redress....434
Arch.
—Fireproof ....*187
—Spiral, of Eskimo hut....*373
Archaeology.
—Ancient and modern irrigation....*314
—Assyrian library....126
—Cave dwellers, art of....185
—Earliest story of the deluge....*277
—Oldest attic letter....276
—Petra ....*213, *220
—Sacrificial compliments paid to buildings ....217
Architecture, spiral arch....*373
Area finding apparatus....*14
Argentine exposition....143
Army rations, increased cost....321
Ash sifter, home made....*128
Ashes, removal hydraulically....277
Assyrian library of King Sardanapalus ....126
Astronomy.
—Effel's photographic heliograph...*393
—Heavens in January, *12; February, *126; March, *202; April, *282; May, *378; June, *442.
—Influence of phase on brightness....392
—Other worlds in space....*160
—Photographing entire heavens....459
—Spectroscopic study of the sun....478
—Star temperature measuring *493, *501
—See also Eclipses; Moon; Observatories; Planets by name; Sun.
Atmosphere.
—Atmospheric electricity as source of power ....143
—Coldest region of....474
Automobiles.
—Armored cars ....*48
—Buffet tender ....*57
—Car for railways....*57
—Electric automobile .... 51
—Farmer's motor vehicles....*43, 50
—Feed pipe obstruction, to prevent..486
—Fire engines ....*54
—Identification chart ....*59
—Localizing gasoline explosion.... 87
—Low priced car .... 52
—Motor balloon-guns ....*48
—Overhauling a car....*55
—Registration and Licenses (1910) of 64
—Repairs at home....*62
—Road and the motor car....*46
—Street railway automobile....*147
—Truck with four-wheel drive....*56
—See also Motor Sleds.
Automobiles, accessories.
—Anti-joy-ride devices ....*49
—Parsons's spring wheel....*56
—Pump ....*303
—Umbrella shelter for ....*264
—Cars of 1910....*90
Automobiles, development.
—Development in 1910.... 44
—National show, tenth.... 57
—New York show.... 8
—Marvelous industry....*293, 298
—Middle West and automobile industry .... 48
—Touring car .... 44
Automobiling.
—Instrument for detecting speed law violations ....*217
—Records at Ormond Beach....*278
—Timing an automobile race....*296
—Wireless telegraph apparatus for..*395
—Wireless telephony for motorist... 39

B

Balloons and airships.
—Aeroplane and the dirigible....370
—Electrically controlled balloons....216
—Novel balloon gas.... 90
—Porter, Rufus and his flying machine .... * 31
—Trip in largest balloon....*256
—Wooden frames for airships....*465
—"Zeppelin," accident to....*416
Baths, public of N. Y.... 27
Batteries. See Electric batteries.
Baxendale, Thomas A., death....318
Beef-juice press ....504
Bell and the telephone....*482
Belts, steel ....138
Bertillon and burglar's "jimmy"...*484
Bicycles, motor auxiliary for....*264
Birds as mechanisms....*242
Boats.
—Deck joints, to make tight....*486
—Houseboat to build for $300....*402
—Overhauling a boat....*284
—Reaper boat for water plants.*357, 419
—Steam boxes for boat building....*486
—Tent and boat, convertible....*423
Boiler bolts, tool for cutting....*107
Boiler and furnace, novel....*90
Boiling, paradoxes of....168
Boring centrally in bar....*486
Bowling machines ....*24
Brake, automatic....*108
Bread under the microscope....356
Brennan monorail car....271
Brick kilns, brace for....*107
Bridges.
—Afghanistan, metal bridge ....*241
—Concrete, artistic ....*216
—Nam-Ti, China....*477
—Masonry arch, long span....*297
—Raising bridge by cranes....158
—Temporary construction ....*91
—See also Quebec bridge.
Brooder, electric ....*204
Buggy-top for launches....349
Buildings.
—Skyscrapers, new for old....414
—Sacrificial compliments paid to....217
Bullets flight ....*203
Burglars, Bertillion dynamo meter..*480
Butterflies, collection and preservation ....*484

C

Cable frozen....*147
Canals.
—Berlin-Stettin ....123
—Development in Europe and U. S.334
—Electric locomotive haulage....323
—Lake Washington ....*103
—New York barge canal....*197
—Scottish ship canal....254
—Tieton canyon, Yakima....*320
—See also Panama Canal; Suez Canal.
Candle and funnel....*168
Cannabinol, chemical structure.... 26
Carboys, apparatus for emptying...*445
Cargoes, porhydrometer for weighing *392
Cars. See Railroad cars; Street cars.
Casks, new method of coopering.... 14
Cave-dwellers, art of....185
Cellar torch ....*181
Celluloid, manufacture of....*361
Census double in China.... 28
Centrifugal machine ....*107
Charcot and the Antarctic....182
Chemical growth curious....*31
Chemicals, wandering ....*523
Chicago rapid transit problem.*433, 439
Chimes rung with music sheets....*304
Chimnies, concrete....*166
Chinese double census.... 28
Cider, scientific making....407
Circle, method of finding center....*324
City Hall Park, preservation....254
Clark, Galen, death....299
Clock, gyroscope as....123
Clothes-line hanger ....*14
Coal.
—Anthracite beds of Alaska....198
—Dust explosion prevention....427
—Fuel economy and our natural resources ....390
—Grate for small coal ....*127
—Hoganas mines, South Sweden....478
—How to burn economically....*128
—Occluded gases in coal....162
—Self discharging coaling vessel..*180
—Valuation of public lands....241
Coast defense.
—American Gibraltar, Key West....234
—U. S. seacoast defences....*309
Colloidal solutions of metals.... 98
Comets.
—Comet B 1910. ....199
—Comets due this year....163
—Comet notes....*416
—Could earth collide with?....194
—Encke's early appearance of....375
—Ephemeris of comet A, 1910..123, 219
—Fontenelle's theory of....451
—Innes's comet discovered....108
—New cometary theories....479
—See also Halley's comet.
Concrete.
—Chimneys and water-towers of blocks ....*166
—Fireproof arch ....*187
—Hollow poles .... 28
—Gatum locks, Panama.*161, *273, *279
—Method of bonding....145
—Reinforced bridge....*216
—Reservoirs for crude oil.... 11
—Resistance of the gun-fire....519
—Water works, Indianapolis....*576
Conservation.
—Fire control in National forests...421
—Fuel economy and natural resources, 390
—Water conservation in New York, 138
Continents, height of ....*464
Conveyers, for libraries....122
Corn, costliest ear in the world....*457
Cotton, effect of rainfall on....319
Couplings, for shafts....*345
Crystalization, experiments in ....*243
Current wheel ....*223
Curtiss's flights. See Aeronautics.

D

Dams.
—Damming the Mississippi....*422
—Highest dam....318
—Olive Bridge ....*257
Day, civil ....*302
Delagrange, Leon, death.... 85
Deluge, earliest story of....*277
Densities, some extraordinary....*364
Detectors. See Wireless telegraphy.
Dew for use as drinking water....145
Dies, pipe, sharpening....*324
Displaying objects, appliances for..*303
Distillation, experiment....168
Distilling licenses....499
Diving armor, inventor....*346
Dogs, ambulance for....* 91
Dolbear, Amos E., death....199
Door holder, convenient....*205
Door securing device ....*107
Dough mixing apparatus....*223
Dover, naval harbor at....*88, 89
Drilling centrally in bar....*486
Dumping scow, "Viking"....*316
Duodenum in medical practice....358
Dynamometer, burglar detector....484
Dynamometer, fan ....*57

E

Earth.
—Elasticity of ....394
—Nature of interior....279
Earth boring machine....373
Earthquakes. See Seismology.
Ebullition, paradoxes of....168
Eclipses, Solar and lunar in May...*339
Eddy, William A., death.... 26
Edison.
—Storage battery....308
—Storage battery car....*120
Educational appliances for displaying objects....*303
Eggs.
—Curious forms ....*263
—Egg with a tail....*147
—Production by artificial selection..277
Egypt, climate changes....216
Electrical apparatus and appliances.
—Electrolytic interrupter ....*523
—Fans for veterinary purposes....*337
—Furnaces, small ....364
—Geissler tubes from electric light bulbs ....*523
—Heat penetration for treating diseases ....* 6
—Perforating pen ....* 86
—Plug connector....445
—Sunken treasure hunting device wanted ....219
—Wire testing needle....*523
Electric batteries.
—Edison's storage battery....308
—Galvanic, rough and ready.... 1
—High potential primary battery..*264
Electric insulator, high tension....*346
Electric lighting.
—Filament vibrations....349
—Filaments in train accident....242
—Fluaments, metallic....168, 339
Electric lighting.
—Laboratory for improving lamps...407
—Mercury arc, daylight efficiency....377
—Mercury arc patents ....359
—Mercury vapor, effect on eye....318
—Stages, new way of lighting....342
—Street lighting, rational....354
—Tungsten lamp tests....315
—20,000 candle-power plant....340
—See also Illumination.
Electric locomotive for canal haulage.323
Electric power from atmosphere....143
Electric power plants.
—Fifty-ninth St. power-house....234
—Plant operated by air turbine.... 86
Electrification of railroads.
—British steam railway electrification 22
—N. Y. Central electric zone extension .... 86
—Overhead construction on N. H. R. R. ....*140
Electroplating outfit ....*524
Elektron, light metal....64, 201
Elevators of Metropolitan Tower, *353, 358
Ellipse, simple construction of....*459
Energy.
—Coil spring....308
—Solar heat ....414
Engines. See Gas and Gasoline Engines.
Eskimo huts, spiral arch....*373
Espalier walls, glass....*28
Esperanto and Ido....498
Etna in eruption....279
Exhibitions.
—Argentine exposition....143
—World's fair of future....314

F

Fan, air-cooling ....*504
Farmers railway school....*356, 420
Fellowships industrial in universities. 98
Fence post anchor....*423
Fence post, concrete....*505
Fertilizers in agriculture....181
Fever, electrical recorder....*222
Files and their uses....*325
Filter, simple effective....*169
Fir trees of Northwest....*323
Fireproof arch ....*187
Fireproof construction vs. fire loss.*345
Fire service.
—Automobile engines ....*54
—Detector for fire-alarm boxes....*264
—Fire fighting without engines, *453, 458
—High pressure reduction valve....458
Firefly, light of....87
Fires.
—Annual fire loss....*345
—Control in national forests....421
—How to act in....*441
—Method of carrying unconscious persons ....*91
—Safe knot in case of fire....*479
Fish.
—Goblin shark of Japan....*186
—Have fishes memory?....185
Flatiron support electrically heated.424
Floods. See Paris floods.
Florida, launching of....*418
Flying machines.
—Novel paddle machine....*465
—See also Aeroplanes; Balloons and airships.
Fly-wheel, failure of a ....108
Foods, color of....429
Forestry.
—Big fir trees....*323
—Fire control in national forests....421
Fourth of July casualties....519
Fruit culture, espalier walls of glass.*28
Fungi, a garden of....*500
Furnaces.
—Boiler and furnace construction....*90
—Grate for small coal....*127
—How to burn coal economically....*128
—Thermostatic alarm....*127
Fuse block, safety....*187

G

Galileo's telescope ....*147
Gamblers method of cheating....*323
Game of ring throwing....*14
Gas.
—Economizer for ....*127
—Gas-main stopper ....*14
—Water heater ....*485
Gas and gasoline engines.
—Internal combustion water pump.*257
—Localizing gasoline explosions.... 87
—Two-cycle motors ....*444
Gasoline tanks, safe....*445
Gatun Locks. See Panama Canal.
Gear, speed reduction. See Steam turbines.
Geissler tubes from electric light bulbs ....*523
Glass, boring holes in....*205
Gould $15,000 flying machine prize..482
Graphite mining in Ceylon....*29
Grate. See Furnaces.
Grease, electrolytic removal....158
Guns.
—Concrete resistance to gun-fire....519
—Gun-bore sighting telescope....*504
—Largest projectile in the world....*147
—Luminous gun-sights ....*424
—Motor balloon guns....*48
—Trocha cutter ....*380
—See also Naval guns; Rifles.
Gusher Lakeview....*413, 419, *443
Gyroscopes. See also Aeroplanes; Monorail.

H

Hair.
—Texture and "kinks" in the negro's ....359
—Removal from hides....124
Halley's comet.
—At its brightest....*313, *317
—Condensed facts ....*258
—Disappointingly faint ....334
—Ephemeris of ....143, 239
—Evening sky ....*394
—How an amateur may find....*102
—Measures of ....*162
—Model of orbit....*359
—Photographed by Barnard ....*416
—Positions of comet, earth and sun.*27
—Spectrum of ....*217
—Telescope that first picked up....*380
—Traced by Hind....336
—Transit of ....438
Hangman's rope ....217
Harbor naval at Dover....*88
Harrow with automatic lifts....*504
Hat-fastener ....*424
Heater, gas, for water....*485, *486
Heater, gas, illuminated....*325
Heliograph, photographic, Eiffel's..*393
Hero's fountain ....*168
Hides, removing hair from....124
Horns, interlocked....*147
House of Representatives to remodel.296
Houseboat, how to build....*402
Huggins, Sir William....454
Hybrid, zebrass ....*380
Hydraulic motor ....*503
Hydrogen.
—For inflating tires.... 52
—In hot water radiators....375

I

Ido and Esperanto ....498
Illumination.
—Cost of various methods....268
—Daylight efficiency of....377
—Gas heater illuminated....*325
—Mercury lamp, effect on eye....318
—Stages, new way of lighting....342
Illusion, color and relief....*32
Incandescent lamps. See Electric lamps.
Incubator and brooder, electric....*204
Index for pocket memoranda....*423
Infantile paralysis, Rockefeller Institute ....122
Insects.
—Butterflies, sense organ of....375
—Collection of moths and butterflies*484
—Pests in house and store....*344
Instincts, strange animal....163
Insulator, high tension ....*346
Insurance.
—Navy as national....474
—Responsibility of employers....172
Inventions, brief notes about....424, 503
Inventors.
—Government and the inventor..454, 498
—Nature as inventor....*379
—Scientific American prizes for, 479, 518
"Invicta," the old locomotive....*380
Ionization of air....*244
Iron, rate of pig production, U. S...482
Irrigation.
—Ancient and modern....314
—Yakima water-shed....*320

J

Jack block improved....*204
Jack for wagons....*205
Jeffery, Thomas B., death....318
Jordan, David Starr....*13
Jupiter and his satellites....*218

K

Key West, American Gibraltar....234

Kinematograph. See Moving pictures.
Kinetic energy in railway train....482
Kites, military ..... 408
Knots, safe in case of fire.....*497
Koch, Dr. Robert.....*483

L

Laboratories.
—Good roads .....354, 434, 443
—Incandesent lamp .....407
—Radium baths and drinking water.*461
Lathes.
—Centering tool for .....*324
—Thread cutting without tool.....*324
—Tool holding device for.....*304
Launches, buggy-top canopies for....349
Launching of Florida.....*418
Leak in pipe, repairing.....*324
Le Blon's fatal accident.....342
Lenses.
—How to test .....*363
—Turning concave and convex surfaces .....*485
Letter, oldest Attic.....276
Letter scale .....*346
Libraries.
—Assyrian, King Sardanapalus.....126
—Electro-pneumatic conveyor for....122
—Sahara .....183
Life insurance and responsibility of employers .....172
Light. See Illumination; Electric lighting.
Lock, device for doors.....*107
Locomotives.
—Coking principle of operation.....336
—Freight engine, giant.....*436
—"Invicta" .....*380
—New era of American.....*109
—See also Electric locomotive.
Logging.
—Cochin forest railway.....*177, *184
—Power driven saw.....*81, 86
Lubricants.
—Mineral, value at high temperatures .....374
—Tests for oils .....*244
—Typewriter cleaning oil.....325
—Unaffected by cold .....106

M

Macrographic examination of metals..322
Magic square .....*375
Magic Square. See also Number problems.
Magnetism, increasing traction by...297
Mail.
—Box for mail chutes.....*303
—Fast mail of future.....339
—Parcels post, improved.....274
Maine, raising the.....454, 499
Marble, imitation .....*31
Martian canal explained.....82
Massage apparatus .....*227
Measures, bisections of a mile.....87
"Mechanipulate," new word....474, 518
Memoranda, pocket index for.....*423
Mercury arc. See Electric lighting.
Mercury interrupter, new form.....304
Metals.
—Contagious diseases in metals....*517
—Elektron .....64, 201
—Macrographic examination of.....322
Meteor in flight.....163
Meteorology.
—Atmosphere, coldest region.....474
—Forecasts for aviators.....519
—Mist whirls .....103
—Storm warnings for aeronauts.....511
—Summary monthly,
64, 143, 219, 318, 398, 479
—Sun and magnetic disturbances....103
—Units, reform .....294
Metropolitan tower, elevators.*353, 358
Meyer, Secretary, naval reorganization .....158, 254
Microscope.
—Bread under .....356
—Microscope as food detective.....*337
—Polariscope, attachment for.....*524
Mile, continuous bisection of..... 87
Military art and science.
—Aerial torpedo .....482
—Military kites .....408
Milk.
—Artificial .....*364
—Bacteria in milk.....239
—Capping bottles by machine.....*264
—Clean milk in California.....356
Mine boring in Prussia..... 7
Mining accidents.
—Coal dust explosives prevention...427
—Emergency shafts for mines..... 9
—Safety in mines.....9, 123
Mirrors.
—Silvering glass at home.....*107
—Suction bracket for.....*380
Mist whirls .....103
Moedebeck, Hermann, death.....260
Monaco flights .....*333, *342
Monaco, oceanographic museum.
*422, *476
Monorails.
—Brennan's monorail car.....271
—Earth rotation and gyroscopic cars. 9
—Gyroscopic adaptability to railroad service .....82
—Scherl's gyroscopic car.....*84
Moon and radio-activity .....98
Moose, interlocked antlers.....*147
Mother-of-pearl imitations .....283
Moths, collection and preservation of.*484
Motor-boating.
—Madison Square show.....*196
—Model motor-boat racing.....*340
—Monaco motor-boat races.....*360
Motor-cycle auxiliary for bicycles..*264
Motor-sleds, pedrail and paddle wheel types .....*396
Mount McKinley, ascent.....342
Mountain triangulation effect of refraction .....319
Moving platform .....22, *253, *257
Moving pictures.
—Amateur's apparatus .....*463
—Kinematograph rifle target.....144
—Royalties .....276
Museum, oceanographic at Monaco..*476

N

Nature.
—Animal instincts .....163
—Birds as mechanisms.....*242
—Butterflies' new sense organ.....375
—Eggs of curious form.....*263
—Fishes' memory .....185
—Insect pests .....*344
—Inventor .....*379
—Moths and butterflies, collection..*484
—Shark (goblin) Japan.....*186
Naval guns.
—Armstrong and 12-inch gun.....*121
—14-inch gun .....*121, *122
—Records in U. S. and British navies .....314
—13-inch gun ship.....*443
—What smokeless powder has made possible .....*117, *121
Navies.
—Battleship fleet in each ocean....354
—Cost of running the navy.....104
—Foreign progress in 1909.....*102
—Meyer's reorganization .....158, 254
—National insurance.....414
—Navy built vs. contract built ships.274
—Payroll of U. S. Navy..... 86
Negro's hair, kinks in.....359
Number problems.
—Magic square .....*375
—Mathematical oddity ..... 87
—Mr. Riedever's problem.....163, 259
—Puzzle .....299
—Squares and cubes.....143

O

Observatory, Lowe's .....*144
Oceanographic museum of Monaco,
*422, *476
Oils. See Lubricants; Petroleum.
Oil can, flexible bottom.....*108
Oil can, safety .....*486
Oldfield, records at Ormond Beach..*278
Organ blower .....*465
Osmotic pressure and currents.....334
Ostrich farming as an industry.....*200
Overshoes, device for removing....*424
Oxygen, future uses of.....390
Oxygen inhalation for increasing energy .....*2, *6

P

Palissy, famous French potter.....*125
Panama Canal.
—Gatun locks .....*161, *273, *279
—Investment .....274
—Tides at .....343
Paralysis infantile. Rockefeller Institute .....122
Parcels post, improved.....274
Paris flood.
—Causes .....138
—Great flood .....*157, *164
—Lessons .....118
Parsival monoplane, first test.....342
Paulhan, See Aeronautics.
Patents.
—Appeals, reducing number of.....418
—Commissioner's annual report.....178
—Complex, English judicial opinion..520
—Dishonest schemes; information wanted .....479, 519
—German patent decision.....259
—Government and inventor.....454
—Great Britain, complexities.....194
—Law and invention experiments.. 64
—Mercury arc .....359
—What our firm pays for.....419
Pearls, dying .....163
Peary a rear admiral.....165
Peck vs. Workman.....143, 183, 319
Pen, electric perforating.....*86
Pennsylvania Railroad terminal,
*389, *398
Perfumery, home made .....*446
Petra city of solid rock.....*213, *220
Petroleum.
—Advantages of liquid fuel.....314
—Coalinga district .....341
—Fuel economy and natural resources .....390
—Liquid fuel, advantages.....314
—Oil gusher, phenomenal..413, 419, *443
Pfitzner's monoplane.....*140, 299
Phase, influence on brightness of spheres .....392
Photography.
—Changeable photographs.....*283
—Color photography, new system...*497
—Metals, effect on plates..... 82
—Photo-sculpture, Cardins .....*263
—Relief to picture.....518
—Rontgenogram of dressed man...*380
—Vertical photography.....256
—See also Telephotography.
Piano player, invention of.....338
Piano sounding board.....*303
Pile driving without driver.....*216
Piling, rolled steel.....*14
Pipe.
—Die to sharpen.....*324
—Repairing leak in.....*324
—Steel lock bar construction.....*516
—Tobacco, improved .....*346
Plating, electric outfit.....*524
Plating powder for metals.....363
Player-piano invention of.....338
Plug connector .....445
Polariscope attachment for microscopes .....*524
Poles, hollow, concrete..... 28
Polonium properties of.....288
Porhydrometer for weighing cargoes.392
Porter, Rufus, and his flying ship....31
Pottery, Bernard Palissy.....*125
Prizes.
—Scientific American prizes for inventors .....479, 518
—See also Aeronautics, prizes.
Projectile, largest in the world....*147
Projecting lantern.
—Automatic apparatus..... *7
—Electrically controlled .....*343
Propellers.
—Erosion of bronze propeller.....*336
—Speed of aeroplane propeller....*21, 27
Pulleys for experimental work.....*324
Pump.
—Automobile .....*303
—Inlet valve and screen.....*346
—Internal combustion .....*257
Pyrites, gold, galena and chalcopyrite .....108

Q

Quebec bridge.
—Canada and Quebec bridge.....138
—Design, new .....*148, 390
—Steel arch suggested for.....494

R

Radiators, hydrogen in.....375
Radioactivity and the moon..... 98
Radium.
—Action on carbon group.....291
—Baths and drinking water.....*461
—Does it exist in pure state.....390
—Life of .....239
Railroad cars.
—Automobile car for railways.....*57
—Disinfection of .....*320
—Retaining device for .....*223
—Steel car, future.....178
—See also Street cars.
Railroad signals.
—Automatic safety stop.....*224
—Automatic safety system .....*224
Railroads.
—Accident prevention .....334
—Clearing snow from.....*124
—Cochin forest railway.....*177, *184
—Farmers' railway school.....*356, 420
—Friction at curves.....*26
—Elevated, improved construction..*345
—Mileage of world..... 7
—Rail connection .....*423
—Retaining device at curves.....*223
—Town moved by rail.....*465
—Track sander .....*424
—Traffic management .....*328
—See also Electrification of railroads.
Rain drops and sound concussion.....138
Rainbows, remarkable .....219
Rapid transit.
—Belt conveyer .....22, *253, *257
—Chicago solving problem....*433, 439
—Plea for co-operation.....294
—See also Street cars; Subways.
Rations, increased cost of.....321
Refraction in triangulation of mountains .....319
Refrigerating, ammonia purifier....*423
Relief to pictures, screen for.....518
Rescuing unconscious person, method of carrying .....*91
Retrospect for the year 1909..... 4
Rice hulling machine wanted.....319
Rifles.
—Bullet's flight .....*203
—Luminous sights for .....*424
—Sighting a rifle.....*87
Right-handed, why? .....260
Roads.
—Motor car and the road.....*46, 47
—National laboratory ....354, 434, 443
Rockefeller Institute's work on infantile paralysis .....122
Rocking attachment for chairs.....*108
Roentgen rays, polorization.....354
Roentgenogram of fully dressed man.*380
Rougier's Monaco flights.....*333, *342
Rotary engines.
—New type .....*456
—Revival of .....454
Rugs, chemical washing.....108
Ruhmkorff coil, giant.....*457

S

Sacrificial compliments paid to buildings .....217
Safe, revolving .....289
Sahara, library in .....183
Salting device for stock.....*187
Sand whirls .....219
Sander for tracks.....*424
Sanitarium and sanitorium.....439
Sapphires, experiments .....251
Sardanapalus, library of.....126
Sashes, wrought steel.....*187
Saturn, wisps of.....219
Saw, power driven.....*81, 86
Saws, why they break.....103
Scale pan, butcher's.....*107
Scales, simple letter.....*346
Scherl's gyroscopic car.....*84
Scientific American prizes for inventors .....479
Scientific American Trophy,
*7, 234, *259, *480
Scientific research, decline of in universities .....370
Scootering, motor .....*147
Sculpture, photographic .....*393
Seismology.
—Cartago earthquake .....*440
—Centers of seismic and volcanic activity .....186
Shackleton, Lieut. .....*294
Shark, goblin of Japan.....*186
Shaving glass, suction brackets....*380
Ship, "Daniel Tenney," end of..... 27
Shipbuilding.
—Investigations regarding propulsion of ships ..... 82
—Navy vs. contract-built ships.....274
—Tribute to American shipbuilding..194
Shoe stretcher .....*108
Sievert, Paul Theodore, death.....318
Silenium cell with contact by pressure .....*168
Silvering glass at home.....*107
Skyscrapers, new for old.....414
Sleigh, trackless electric trolley-drawn .....*277
Smokeless powder, manufacture of..*141
Smokeless powder, what it has made possible .....*117, 121
Snow clearing from railway tracks in Canada .....*124
Sound.
—Artificial production of voice.....*120
—Experiments in interference.....*446
—Rain drops and sound concussion..138
"Spanish windlass" .....*324
Spear, Alfred, death.....183
Speed violators, instrument for detecting .....*217
Spring, energy of .....308
Squares and cubes .....143
Stars, morning and evening, for 1910 .....*146
St. Bernard Hospice.....*10, 11
Steam boxes for boat building.....*486
Steam engineering modern triumph.234
Steam engines.
—Headless cylinders .....*465
—New era of the steam engine..... 22
—Reciprocating engine battleship...118
—Rotary engine, new type.....*456
—Rotary engine, revival of.....454
Steam heating, indirect and direct-indirect .....*127
Steamships and steamboats.
—Coaling vessel, self-discharging..*180
—Inventor of steamboat..... 27
—Propulsion of ships..... 82
Steam turbines.
—Efficiency of nozzles.....281
—Hydraulic reduction gear.....274
—Reduction gear .....*137, 142
—Reduction gear tests.....479
Steel ingots thermal treatment.....*262
Steel, qualities of manganese.....*516
Step ladder improved.....*223
Stereopticon. See Projecting lantern.
Sterilization with ultra-violet rays..427
Stethescope and telephone relay.....*496
Stone, soft, hardening..... 124
Stone floating .....*364
Storage battery car, Edison's .....*120
Stove pipe and thimble.....*503
Street cars.
—Edison's storage battery.....*120
—How car reversed its position....*183
—Rail-cleaning car .....318
—Street indicator .....*224
—Street railway automobile.....*147
—Trackless trolley-drawn sleigh....*277
Street cleaning.
—Rail cleaning car.....*318
—Vacuum cleaner .....*91
Street indicator for cars.....*224
Street lighting. See Electric lighting.
Stump-splitter .....*504
Submarine boats.
—How to escape from sunken submarine .....*460
—Life-saving hatch for.....*504
—Peril of the submarine.....474
Submarine mines .....*300
Subways.
—Chicago solving problem....*433, 439
—New York and Paris compared....214
—Plea for co-operation.....294
—Triumph of modern steam engineering .....234
Suez Canal and modern shipping....358
Sun.
—Magnetic disturbances and sun rotation .....103
—Recent study of the sun.....482
—Research, international co-operation .....514
—Size, apparent .....499
—Solar heat, utilization of.....414
—Spectroscopic study of.....478

T

Tanks, gasoline safe.....*445
Telegraphy, high speed .....214
Telephones.
—Alexander Graham Bell and.....*462
—Muffler for transmitters.....*187
—Sensitiveness of .....182
—Relay and stethescope.....*496
Telephotography.
—Telephoto camera .....*269
—Thorne-Bayer apparatus .....*417
Telescope.
—Galileo's telescope .....*147
—Heidelberg reflector .....*380
—How to test lenses.....*363
—Open-air, Treptow, Germany..*97, 104
—That first picked up Halley's comet .....*386
Television, Regnoux-Fournier system.*13
Tenoning machine .....*304
Tent and boat, convertible.....*423
Tetanus. Fourth of July casualties.519
Theaters, new way of lighting stages.342
Therapeutics.
—Duodenum in medicinal practice..358
—Electric heat penetration..... *6
Thermometer, electrical fever recorder .....*222
Thermostatic alarm for heaters....*127
Thread-cutting without screw-cutting lathe .....*324
Time.
—Civil day .....*302
—Wireless signals from Eiffel Tower*497
Timing an automobile race.....*286
Tires inflated with hydrogen..... 52
Tobacco pipe .....*346
Tools.
—Holder device for wood-turning..*204
—Resilient wedge for handles.....*504
—Stay bolt cutter.....*107
—Weighing of handles.....325
Torpedo boat, new type.....*276
Town, moving by rail.....*465
Traction increasing by magnetism..297
Trade mark bills, new.....490
Treasure hunting under water.....222
Treasure hunting under water, apparatus wanted .....219
Trocha cutter .....*380
Tungsten lamps, tests of.....315
Tunnels.
—Denmark and Sweden, proposed....199
—New York water supply.....118
Turbines. See Propellers; Steam turbines.
Twine, manufacture of.....*420
Typewriters, to repair and clean....323

U

Ultra-violet rays, sterilization by....427
Umbrella shelter for automobiles..*264
University.
—Decline in scientific research.....370
—Industrial fellowship ..... 98

V

Vacuum cleaner for streets.....*91
Ventilators for windows, detachable.*303
Veterinary hot air baths.....*337
Viking—self-dumping scow.....*316
Vise, universal .....*24
Voice, artificial production of.....*120
Volcanoes.
—Centers of seismic and volcanic activity .....186
—Etna in eruption.....279

W

Warships.
—Alabama and Maine to be made pre-dreadnoughts .....199
—Argentine dreadnoughts .....*258
—Battleship fleet in each ocean....354
—Brazilian battleship Minas Gereas,
*233, *240
—Did Great Britain have first dreadnought? .....*160
—Final reciprocating engine battleship .....118
—German dreadnought "Nassau"....*
—Idaho and Mississippi rebuilding..296
—Launch of Florida.....*369, 374, 418
—Maine, raising .....454, 499
—North Dakota, speed..... 9
—Re-arming our warships.....4.163
—13-gun ship; latest dreadnought.*443
—Utah, our latest dreadnought.*193, 199
—"Whip-creation" battleship .....214
Washington aqueduct, condition of.. 90
Watch springs, why they break.123, 375
Water motor, improved.....*503
Water, salt changed to fresh.....323
Water supply.
—New York deep tunnel.....118
—Olive Bridge dam.....*237
—Reinforced concrete construction.*376
—Washington aqueduct condition of.. 90
—Water conservation in New York..138
Water tower, concrete.....*166
Waterway development in Europe and U. S. .....334
Wave versus ship.....98
Waves, utilizing power of.....*101
Wax melter .....*181
Weather. See Meteorology.
Wedge for tool handles.....*504
Weeds, reaper boat for cutting,
*357, 419
Weighing, porhydrometer for cargoes.*392
Wharf serpentine .....*465
Whittling, chain expert.....*91
Winshurst machine increasing efficiency .....167
Windless, Spanish .....*324
Windmill, electric plant operated by. 86
Wire cutter for guns.....*380
Wireless telegraphy.
—Electrolytic interrupter .....*523
—Glidden tour apparatus.....*395
—Mercury interrupter .....304
—On all new navy vessels.....298
—Organization of amateurs.....*518
—Silicon detector improved.....*167
—Static machine experiments.....*32
—Thorne-Baker tele-photographic apparatus .....*417
—Time signals from Eiffel Tower..*497
—Torsional wave detector.....*
—Typhoon warning in Philippines..294
Wireless telephony for motorist..... 39
Woodworking machines, attachment for .....*345
Word, "mechanipulate" .....474
Working capacity of man after accident .....329
Workman, Mrs. See Peck.

X

X-Ray photograph of dressed man..*380

Z

Zebrass, competitor of horse.....*380
Zeeman effect, simple method of producing .....*243
"Zeppelin," accident to .....*416